AMENDMENTS TO THE SPECIFICATION

Please amend the specification at page 5, lines 25-31, as follows:

The first and second p-layers amorphous silicon-containing material are generally selected from the group including hydrogenated amorphous silicon, hydrogenated amorphous carbon, and hydrogenated amorphous silicon germanium. In certain embodiments, the i-layer comprises hydrogenated amorphous silicon germanium having a bandgap ranging from about 1.4 e-V to about 1.6 e-V and wherein the first and second sub p-layers comprise nanocrystalline ~~amorphous~~ silicon with a bandgap of 1.6 eV.

Please amend the specification at page 6, lines 19-22, as follows:

Various materials are especially useful in the present invention. For example, the first and second p-layers can comprise nanocrystalline ~~an amorphous~~ silicon-containing material; the i-layer can comprise amorphous silicon germanium; and the n-layer can comprise amorphous silicon.

Please amend the specification at page 13, lines 10-27, as follows:

As shown in Figure 5b, a nanocrystalline ~~An amorphous~~ silicon-containing thin film semiconductor layer forms a single junction solar cell. The ~~amorphous silicon~~ semiconductor solar cell comprises a p-i-n ~~amorphous silicon~~ thin film semiconductor with a bandgap ranging from about 1.4 eV to 1.75 eV, usually to 1.6 eV. ~~The amorphous silicon semiconductor material can comprise: hydrogenated amorphous silicon, hydrogenated amorphous silicon carbon or hydrogenated amorphous silicon germanium.~~ A second positively doped (p-doped) nanocrystalline ~~amorphous~~ silicon-containing sub p-layer is connected to the ITO layer of the front contact. A first positively doped (p-doped) nanocrystalline

~~amorphous~~ silicon-containing p-layer is connected to the second sub p-layer. The first and second sub p-layers can be positively doped with diborane (B_2H_6), BF_3 or other boron-containing compounds. An amorphous silicon-containing, undoped, active intrinsic i-layer is deposited upon, positioned between and connected to the first p-layer and a n-type amorphous silicon-containing layer. The n-layer is positioned on the i-layer and can comprise amorphous silicon carbon or amorphous silicon negatively doped with phosphine (PH_3) or some other phosphorous-containing compound.

Please amend the specification at page 14, lines 22-27, as follows:

Doped layers (~~p-layer,~~ n-layer)

The base material of the n-layer ~~doped layer(s)~~ is composed of non-single crystalline silicon type semiconductor. Examples of the amorphous (abbreviated as a-) silicon type semiconductor include a-Si, a-SiGe, a-SiC, a-SiO, a-SiN, a-SiCO, a-SiON, a-SiNC, a-SiGeC, a-SiGeN, a-SiGeO, a-SiCON, and a-SiGeCON.

Please amend the specification at page 16, lines 2-9, as follows:

The solar cell device structure of Figure 5b is SS/back metal -reflector/ZnO layer/a-Si:H n-layer/~~n-i buffer~~/a-SiGe:H absorber i-layer/nc-Si: p-layer@Ts=140ºC/nc-Si: p-layer@Ts=70ºC/~~i-p buffer/a-Si based p-layer/~~ITO. The a-SiGe:H absorber i-layer was ~~layers were~~ deposited using a gas mixture of disilane, germane and hydrogen with a varying germane to disilane ratio and a hydrogen dilution of 5-100. The illumination I-V measurement was taken under a Xe lamp solar simulator. Quantum efficiency (QE) measurement was made in the range of 350-900 nm using a Xe lamp. Light soaking was done under AM1.5 light from a metal halide lamp for 1000 hours.

Please amend the specification at page 8, line 29, to page 9, line 25, as follows:

Fig. 1a is a J-V graph showing nanocrystalline ~~an amorphous~~ silicon with relatively wide bandgap (WBG) top cell having a high performance (V_{oc}=1.023V and FF fill factor 77.5%) obtained using a p-layer deposited at a temperature of 70°C. Such a p-layer forms an ideal junction with a WBG i-layer.

Fig. 1b is a schematic illustration of nanocrystalline ~~amorphous~~ silicon WBG top cell described in Fig. 1a.

Fig. 2a is a J-V graph showing nanocrystalline ~~amorphous~~ silicon top cell having a p-layer comprising nc-Si, ~~a-Si or a mixed of both phases~~ used for Narrow bandgap a-SiGe solar cells where severe rollover occurs in the J-V curve, possibly due to a mismatch at the p-i interface.

Fig. 2b is a schematic illustration of the type nanocrystalline ~~amorphous~~ silicon top cell described in Fig. 2a.

Fig. 3a is a J-V graph of a nc-Si~~/a-Si~~ layer deposited at a higher temperature of 140°C which forms a good interface with the NBG a-SiGe i-layer and leads to an ideal J-V curve. The diode characteristics of this material are better than that of the material shown in Fig. 1a. While the p-layer of the Fig. 3a material is less transparent than the p-layer of the material shown in Fig. 1a, such material is yet acceptable for a middle and bottom cell for in a triple stack. This material, however, would not be acceptable for use in any single-junction a-SiGe solar cells

Fig. 3b is a schematic illustration of the type nanocrystalline ~~amorphous~~ silicon top cell described in Fig. 3a.

Fig. 4a is a J-V graph showing a ~~hybrid~~ p-layer for a single-junction medium bandgap a-SiGe cell (Example 2 - CD919) which forms a good interface with the a-Si i-layer and is more transparent than the material shown in Figs.3a and 3b.

Fig. 4b is a schematic illustration of the type nanocrystalline ~~amorphous~~ silicon top cell described in Fig. 4a.